This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (previously presented): A method of separating at least one target substance from at least one non-target substance in a sample containing a mixture of substances, which comprises:

mixing the sample with a quantity of magnetic particles to produce a suspension comprising a magnetic component and a non-magnetic component, wherein the magnetic component comprises magnetic particles bound to the target substance through at least one moiety on the surface of the magnetic particles that directly or indirectly binds to the target substance, and the non-magnetic component comprises the remainder of the sample;

placing the suspension onto a substrate material, wherein the substrate material comprises a viscous solution that substantially prevents diffusion of the magnetic component unless a magnetic force is applied;

exposing the substrate material containing the suspension to a magnetic field of sufficient strength to cause the magnetic component to migrate across the substrate material; and

repeatedly applying a pre-determined increase in the magnetic field in a pulsing manner with a frequency sufficient to cause the magnetic component to separate spatially from the non-magnetic component of the suspension.

Claim 2 (original): The method of claim 1 comprising the step of removing the magnetic component from the substrate material.

Claim 3 (original): The method of claim 1 comprising the step of removing the magnetic particles from the target substance.

Claim 4 (original): The method of claim 1 wherein the magnetic particles have uniform physical and magnetic properties.

Claim 5 (original): The method of claim 1 wherein the magnetic particles are substantially identical.

Claim 6 (original): The method according to claim 1 wherein the magnetic particles are beads.

Claim 7 (original): The method according to claim 5 wherein the magnetic particles have a diameter from about 0.05 microns to about 4.5 microns.

Claim 8 (original): The method of claim 1 wherein the magnetic particles are chosen from the group consisting of ferromagnetic, paramagnetic or superparamagnetic particles.

Claim 9 (original): The method of claim 8 wherein the magnetic particles are superparamagnetic particles.

Claim 10 (original): The method of claim 1 wherein the magnetic particles include at least two different magnetic particles.

Claim 11 (original): The method of claim 10 wherein the at least two different magnetic particles have different respective physical or electromagnetic properties.

Claim 12 (original): The method of claim 1 wherein the moieties on the surface of the magnetic particles are ligands that directly bind to the target substance.

Claim 13 (original): The method of claim 1 wherein the moieties on the surface of the magnetic particles are capture agents that bind to at least one ligand that binds to the target substance.

Claim 14 (original): The method of claim 12 or 13, wherein the ligand binds to more than one target substance.

Claim 15 (original): The method of claim 13, wherein the capture agent binds to more than one ligand.

Claim 16 (original): The method of claim 12 or 13, wherein the ligands are selected from the group consisting of monoclonal antibodies and polyclonal antibodies.

Claim 17 (original): The method of claim 1, wherein the sample comprises desired components and undesired components.

Claim 18 (original): The method of claim 17, wherein the desired components are biological materials selected from the group consisting of eucaryotic cells, procaryotic cells, subcellular organelles, viruses, proteins, peptides, nucleic acids, lipids, carbohydrates, and complex molecules comprising a combination of at least two of nucleic acids, proteins, lipids and carbohydrates.

Claim 19 (original): The method of claim 17, wherein the undesired components are biological materials selected from the group consisting of malignant cells, toxin-producing cells, bacteria, fungi, viruses, microbial parasites, proteins, peptides, and nucleic acids.

Claim 20 (original): The method of claim 17, wherein the desired component is a specific cell type and the undesired components comprise other cell types present in the sample.

Claim 21 (original): The method of claim 20, wherein the sample is derived from blood of a gestating female, and wherein the desired component comprises fetal cells disposed within the sample and the undesired component comprises maternal cells.

Claim 22 (original): The method of claim 17, wherein the target substance is the desired component, and the non-target substance is an undesired component of the sample.

Claim 23 (original): The method of claim 17, wherein the target substance is an undesired component of the sample, and the non-target substance is a desired component of the sample.

Claim 24 (original) The method of claim 1 wherein the substrate material permits differential rates of migration between the magnetic component and the non-magnetic component.

Claim 25 (canceled).

Claim 26 (previously presented): The method of claim 1, wherein the substrate material is methylcellulose.

Claim 27 (original): The method of claim 26, comprising a solution of between about 1.7% and 2.0% methylcellulose.

Claim 28 (original): The method of claim 1 wherein the substrate material is a growth media for growing at least one substance contained in the mixture.

Claim 29 (previously presented): The method of claim 1 wherein the step of placing the suspension onto a substrate material comprises placing the magnetic mixture along one edge of the substrate material.

Claim 30 (original): The method of claim 1 comprising the step of labeling the target substance with a fluorescent marker.

Claim 31 (original): The method of claim 1 comprising the step of labeling the non-target substance with a fluorescent marker.

Claim 32 (original): The method of claim 1 wherein the magnetic field is of a strength of about 1.5 to about 2.0 Tesla.

Claim 33 (original): The method of claim 1 wherein the magnetic field is of a strength of at least 3.0 Tesla.

Claim 34 (original): The method of claim 1 wherein the frequency at which the magnetic field is activated and deactivated is from about 0.5 to about 10 seconds per pulse.

Claim 35 (original): The method of claim 1 wherein the frequency at which the magnetic field is activated and deactivated is from about 1.0 to about 2.0 seconds per pulse.

Claim 36 (original): The method of claim 1 wherein the frequency at which the magnetic field is activated and deactivated is about 2.0 seconds per pulse.

Claim 37 (original): The method of claim 1 wherein the magnetic field has a strength that varies substantially linearly with distance.

Claim 38 (original): The method of claim 36 wherein the magnetic field strength varies substantially linearly with distance within a plane of the substrate material.

Claim 39 (original): The method of claim 1 wherein the activating and deactivating of the magnetic field is performed at a frequency such that the pulses overlap in time.

Claims 40-92 (canceled).